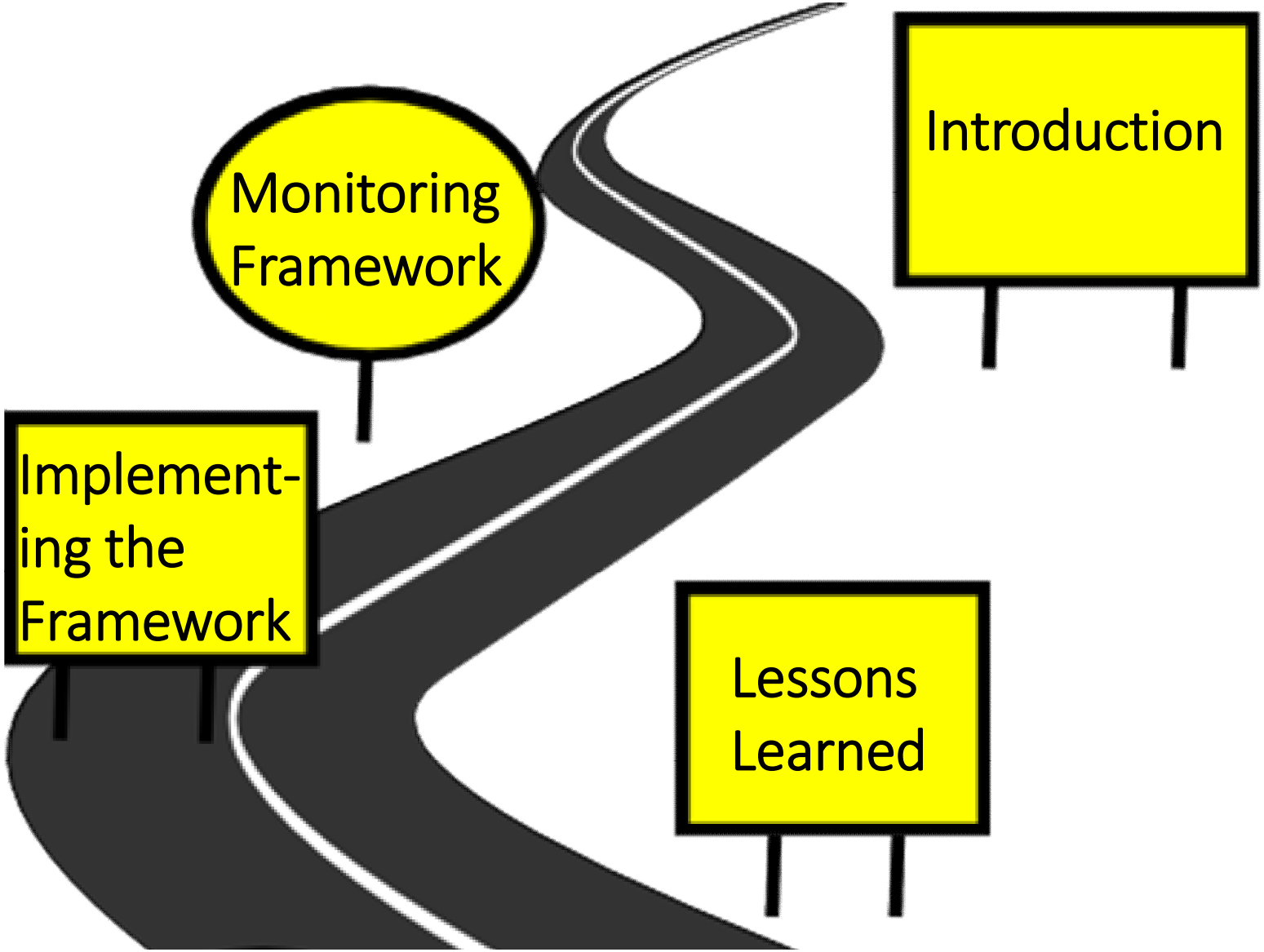
A Case Study in Implementing Standardized Restoration Monitoring in Mobile Bay Subwatersheds

Renee Collini

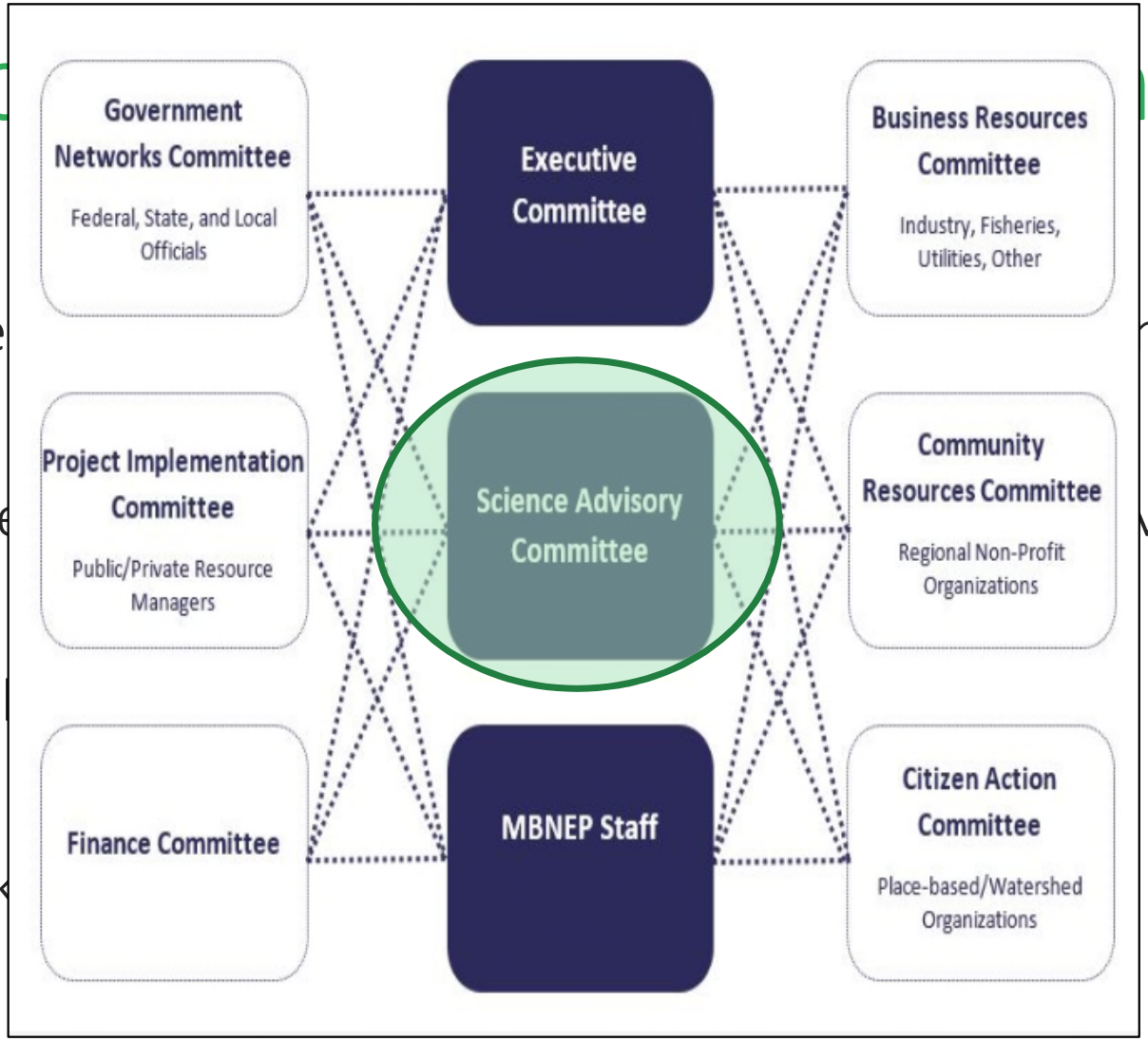
National Monitoring Conference

May 4th, 2016


Introduction
Monitoring Framework
Implement-ing the Framework
Lessons Learned

Introduc al Estuary

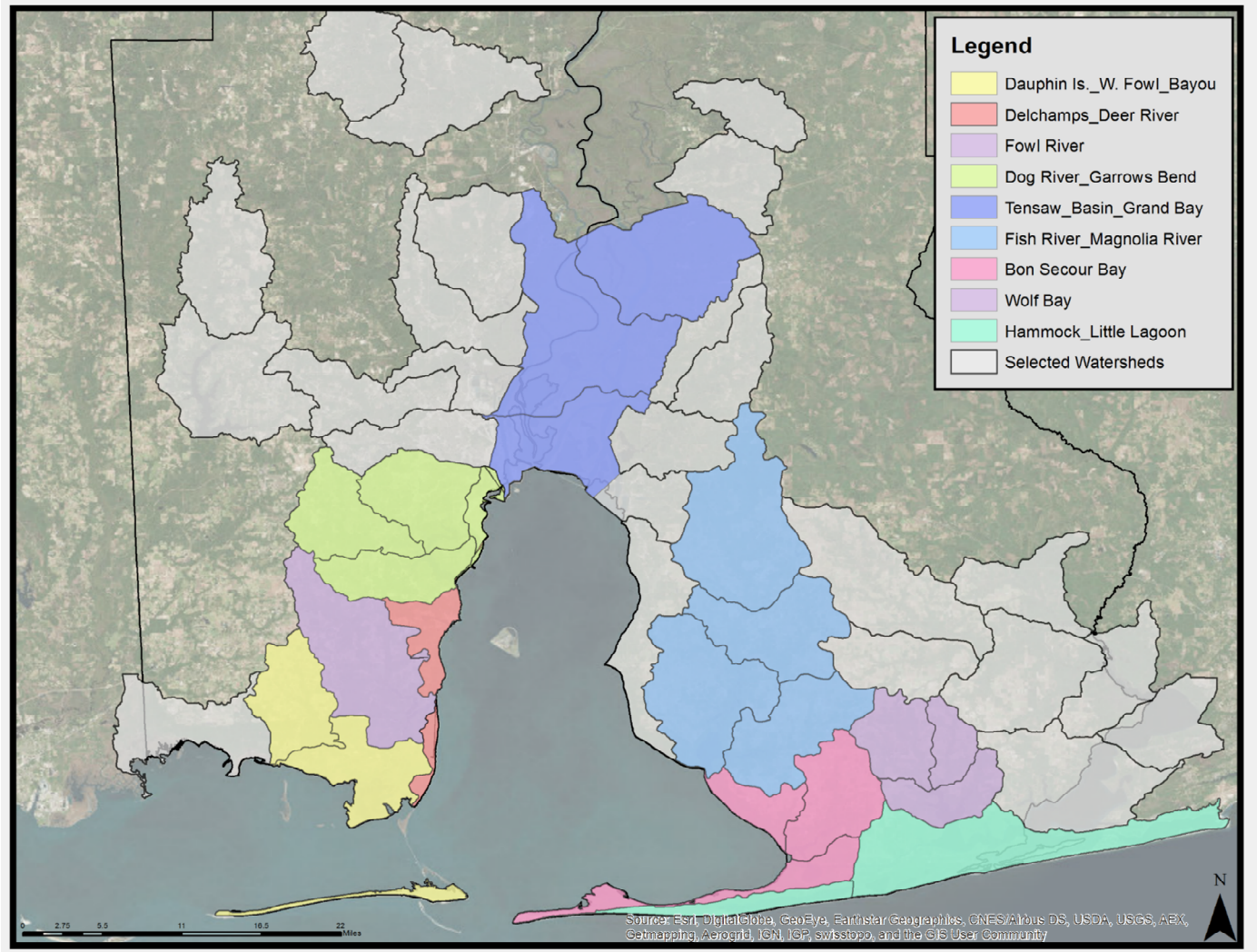
- "promote ne system"
- Comprehe MP)
- Non-regul
- Many stak
- Committees



Science Advisory Committee

- Experts
- 20 voting members; 30-40 participants
- Estuary Status and Trends
- Monitoring subcommittee

Watershed Management Planning



Why a Monitoring Framework?

Lots of restoration & planning

Different people doing different things

Different focus areas/issues

Why a Monitoring Framework?

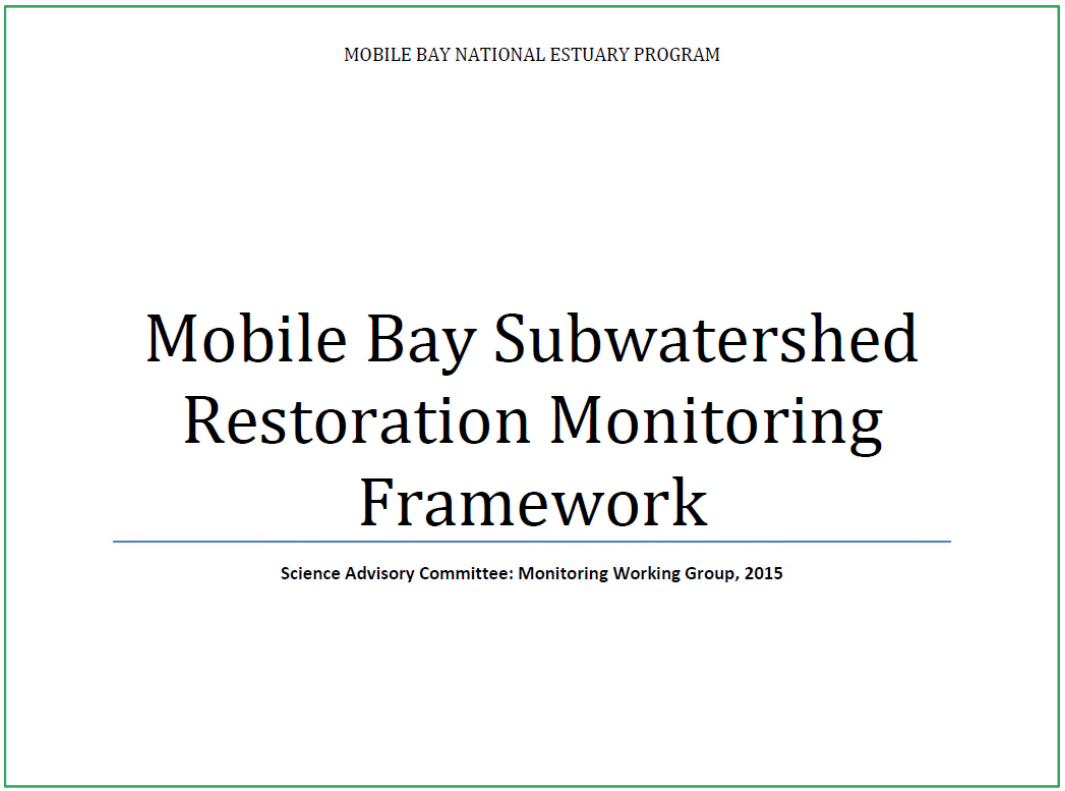
What are the baselines?

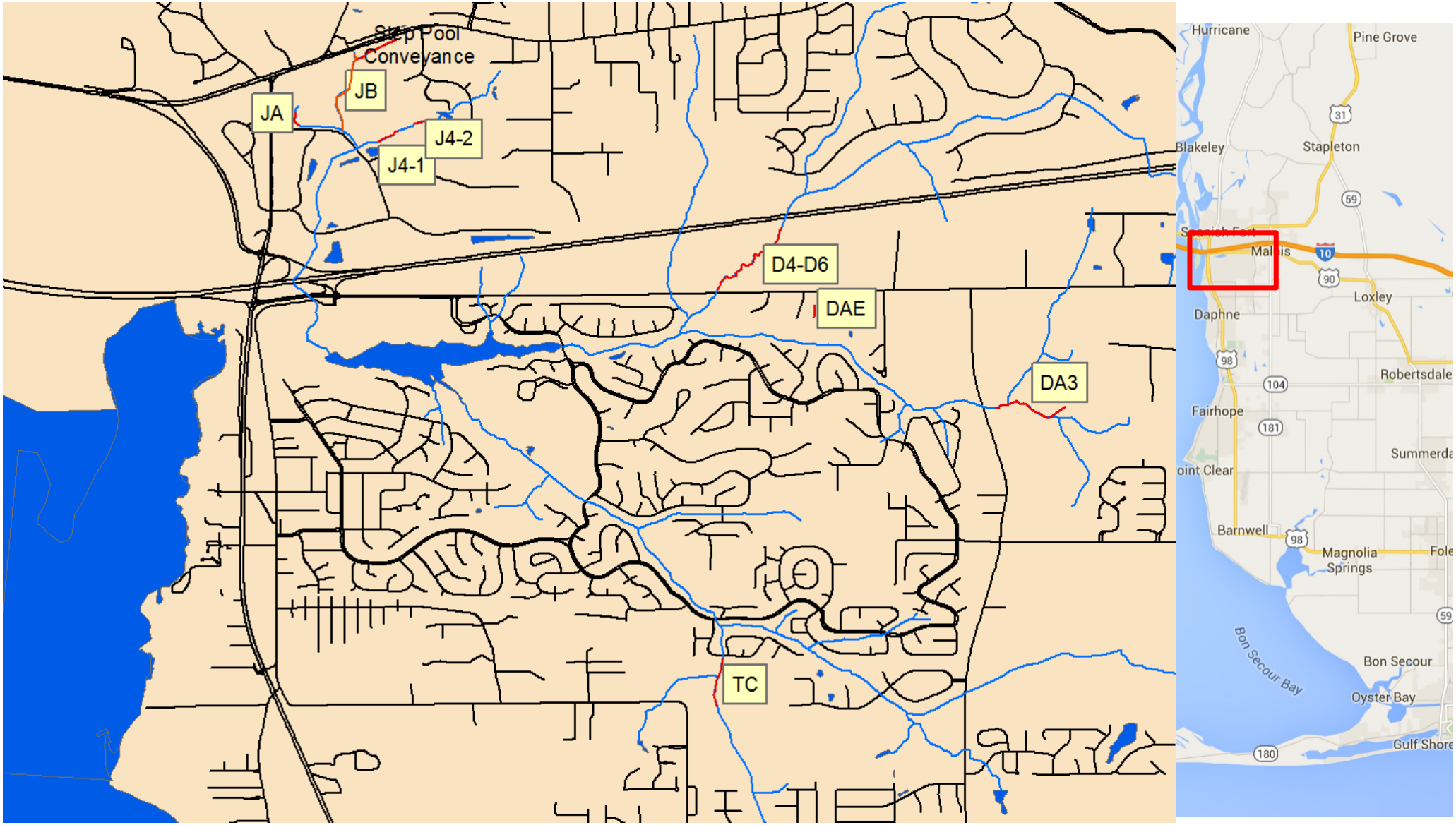
Are the efforts affecting change?

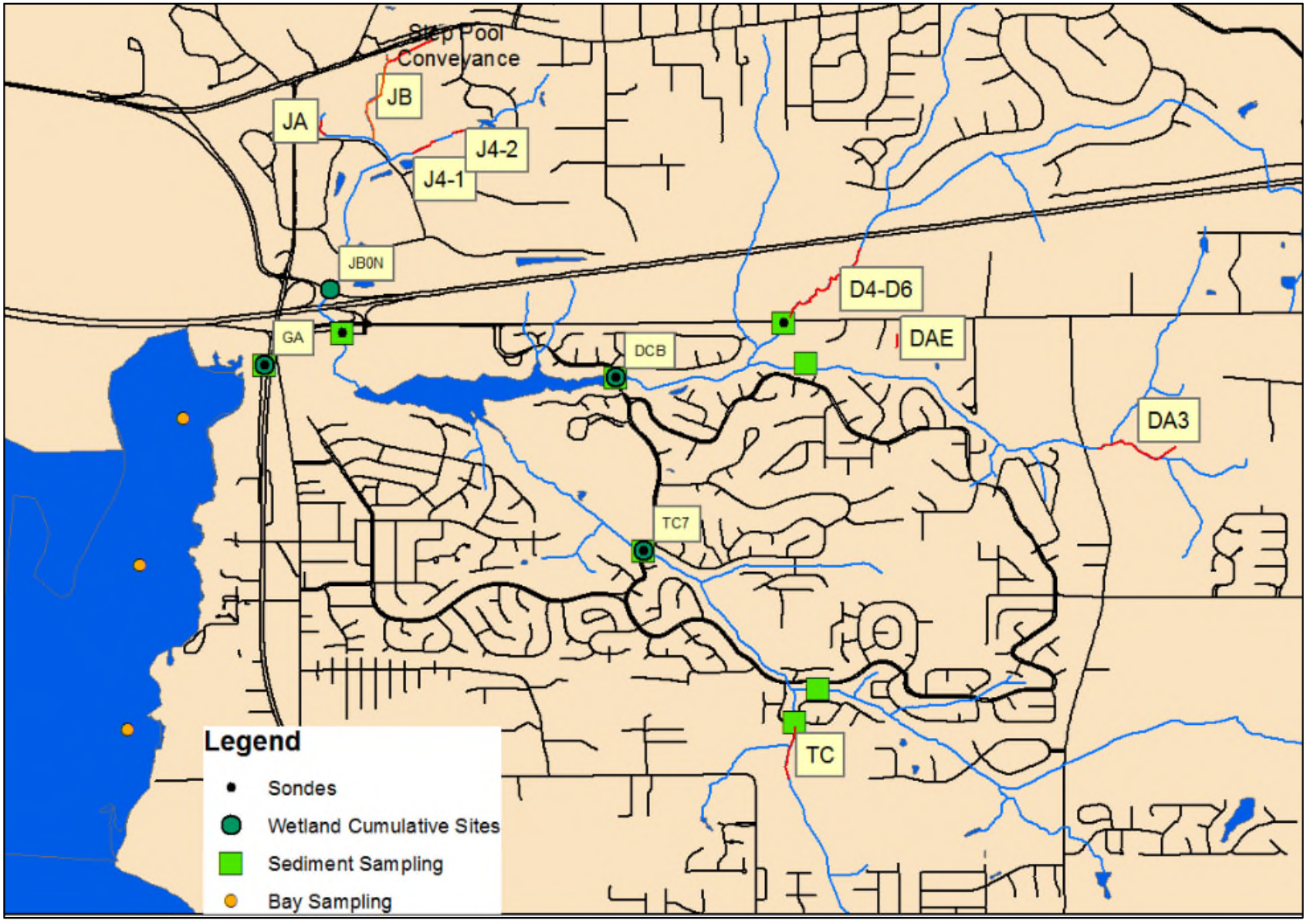
Needed standardize and scalable monitoring

What is in the Framework? Recommendations

- Sampling
  - Parameters
  - Timing & Frequency
  - Location
  - Methodology
- Efficiency
- Data storage & usage
- Implementation




Step Pool
Conveyance
JA
JB
J4-2
J4-1
D4-D6
DAE
DA3
TC
Hurricane
Pine Grove
Blakeley
Stapleton
Loxley
Daphne
Robertsdale
Fairhope
Barnwell
Magnolia
Springs
Bon Secour Bay
Bon Secour
Oyster Bay
Gulf Shore
31
59
10
90
98
104
181
180


Step Pool
Conveyance
JB
JA
J4-2
J4-1
JB0N
GA
DCB
D4-D6
DAE
DA3
TC7
TC
Legend
Sondes
Wetland Cumulative Sites
Sediment Sampling
Bay Sampling

Deterrents to Monitoring

- Expense
- Expertise
- Time
- People

Spread the job around = better chances??

D’Olive Sampling

Parameters cover:

- Water quality
- Sedimentation & flow
- Habitat quality & quantity

12 Agencies & 27 individuals working on data collection

480 water quality samples taken daily

60 parameters sampled in 76 days annually

Positives

Lot of data, little money

Burden sharing

Strengthen inter-agency relationships

Mechanisms to continue

Community buy-in

Challenges

Coordination

- Between monitoring groups
- Between monitoring & restoration efforts
  - *Timing*
  - *Redundancy*

Funding/Resources

Reporting

Data Management: Storage & Metadata

Moving Forward

Other Watersheds

Adjust for lessons learned
- Restoration schedule
- Reporting schedule
- Metadata template
- Public data repository

Maintain long-term monitoring

Photo credit: onyxtruth.com

Summary

Already existing networks

Big undertaking

Requires great people

Cost effective

Specific considerations

Quantify changes

Acknowledgements

Renee Collini
rcollini@disl.org

Parameters: Water Quality Sondes

Samples are taken at 15 min intervals at 5 stations throughout the watershed: 1 at the end of a large restoration, the other 4 at downstream cumulative sites.

Depth

Temperature

Dissolved Oxygen

Conductivity

Turbidity

pH

Parameters: Sedimentation & Flow

Samples are taken 3 times annually: Once during baseflow and twice during rain events. These samples will be plugged into a sediment transport model that has already been developed for the watershed. Samples taken at strategic downstream sites and cumulative sites.

- Samples Taken
  - Total Bed Sediment
  - Total Suspended Sediment
  - Bed Sediment Transport (using a BSRD)
  - Stream Discharge
  - Nutrients
  - pH
  - Conductivity
  - Turbidity
  - Temperature
  - Dissolved Oxygen
- Rates Calculated
  - Bed Sediment Transport Rates
  - Suspended Sediment Transport Rates
  - Total Sediment Transport Rates
  - Bed Sediment Loading

Parameters: Freshwater Wetlands

- Acreage
- Wetland Rapid Assessment Protocol (WRAP)
  - *Wildlife Utilization*
  - *Wetland Overstory/Shrub Canopy*
  - *Wetland Vegetative Ground Cover*
  - *Adjacent Upland Support/Wetland Buffer*
  - *Field Indicators of Wetland Hydrology*
  - *Water Quality Input and Treatment Systems*
- Floristic Quality Index (FQI)
  - *List of all species*
  - *List of all native species*
  - *Total # of species*
  - *Total # of native species*
  - *Percent tolerant species*
  - *Percent intolerant species*
  - *Percent wetness*

Parameters: Streams & Riparian Buffers

Stream Health Index

- *Percent Ground Cover of Organic Matter*
- *Buffer Width*
- *Presence of Non-natives*
- *Bank Erosion Hazard Index (BEHI)*
- *Basal Area*
- *Structural Diversity of the Canopy*
- *Bank Root Density*

Parameters: Intertidal Marshes & Flats

Acreage

Hydrogeomorphic Approach (HGM)

- *Wetland Patch Size*
- *Adjacent Land Use*
- *Mean Marsh Width*
- *Wave Energy Exposure*
- *Aquative Edge*
- *Hydrologic Regime*
- *Nekton Habitat Diversity*
- *Wildlife Habitat Diversity*

- *Mean Percent Cover Emergent Marsh Vegetation*
- *Vegtation Height*
- *Percent Cover of Invasive or Exotic Species*
- *Percent Cover by Woody Plant Species*
- *Weltand Indicator Status*

Parameters: D'Olive Bay

Samples conducted monthly from April - November, and every other month the rest of the year at three locations throughout the bay: High, Mid, and Low.

Photosynthetically Active Radiation

Salinity

Temperature

Dissolved Oxygen

Chl-*a*

Turbidity

Total Suspended Solids

Colored Dissolved Organic Matter